

# ROAD PLAN AND SPECIFICATIONS

#72859 SOUTHBOUND AERIAL  
BAKER DISTRICT HAMILTON UNIT  
S11-T36N-R5E

PROPOSED  
HELICOPTER Ldg  
LANDING



MP 0.5

PROPOSED HELICOPTER  
SERVICE LANDING



LH-1400

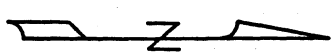
LH-1400

MP 3.3 = MP 0.0

CP-140

CP-140

TO CP-100



LEGEND	
REQUIRED CONSTRUCTION -	==
OPTIONAL CONSTRUCTION -	- - - -
REQUIRED RECONSTRUCTION -	=====
OPTIONAL RECONSTRUCTION -	- - - - -

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DESIGNED BY Wesp	REVIEWED BY B 6701	DATE 05-07-01	SHEET 1 OF 14
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SECTION 0 - SCOPE OF PROJECT

This project includes but is not limited to the following major items:

Reconstruction of the LH-1400 road totaling 0.5 mile involving filling drivable waterbars with gravel ballast, and construction of a log landing and a service landing for helicopter yarding operations.

Development of an existing gravel source at milepost 0.1 of the HO-2010 road. Development will involve clearing, stripping, and processing rock to generate gravel ballast. Pit plan on sheet 13.

SECTION 1 - GENERAL CLAUSES

1.1-1  
Clauses in this plan apply to all reconstruction including landings unless otherwise noted.

1.1-3  
Reconstruction of the following road is not required. If the Purchaser elects to use this road, it shall be reconstructed on the State's location and in accordance with this Road Plan.

Road	Length	Type
LH-1400	0.5 mile	Reconstruction

1.1-4  
If the purchaser desires a road location or design change, a revised road plan shall be submitted to the State for consideration.

1.1-5  
On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or purchaser's choice of construction season or techniques shall be at the purchaser's expense.

1.2-1  
Reconstruction or inactivation of any road shall not be permitted between November 1 and March 31 unless authorized in writing by the contract administrator. If permission is granted to operate between November 1 and March 31, the purchaser may be required to provide a "Closed Season Plan" to include further protection of water, soil, roads, and other forest assets.

1.2-2  
Purchaser shall not use roads reconstructed under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the contract administrator.

1.2.1-1  
Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend more than 500 feet beyond completed construction at any given time unless approved, in writing, by the contract administrator. Drainage shall be provided on all uncompleted construction as approved, in writing, by the contract administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the contract administrator prior to rock application.

1.3-1

Rock hauling on any road shall not be permitted between November 1 and March 31 unless authorized in writing by the contract administrator. If permission is granted to operate between November 1 and March 31, the purchaser may be required to provide a "Closed Season Plan" to include further protection of water, soil, roads, and other forest assets.

1.5-1

Maintenance on roads listed in Contract Clause C-50: Purchaser Road Maintenance and Repair and C-60: Designated Road Maintainer shall be performed in accordance with "Forest Access Road Maintenance Specifications." If permission is granted to operate between November 1 and March 31, the purchaser shall be required to maintain all haul roads including those listed as "designated maintainer roads". If other operators are using, or desire to use these "designated maintainer roads", a joint operating plan shall be developed. All parties shall follow this plan.

1.5-3

Snowplowing shall not be permitted unless authorized, in writing, by the contract administrator.

## SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right of way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the clearing limits, excluding stumps between the clearing limits and grubbing limits.

4.1-2

All right of way debris disposal shall be completed prior to the application of rock.

4.2.3-3

Right of way debris shall not be placed against standing timber.

4.2.3-4

Right of way debris shall be scattered outside the clearing limits in natural openings, unless otherwise detailed in this plan.

## SECTION 5 - EXCAVATION

5.1-1

Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the "Typical Section Sheet."

5.1-2

Purchaser shall not bury merchantable material.

5.1-3

Road grade and alignment shall conform to the State's marked location and drawings. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are 18 percent favorable and 15 percent adverse, unless otherwise detailed in this plan. Minimum radius curve is 50 feet.

5.1-5

Curve widening on the inside of curves shall be 2 feet extra on 80 to 100 foot radius curves and 4 feet extra on 50 to 79 foot radius curves.

5.1-7

Roads shall be reconstructed to the dimensions shown on the "Typical Section Sheet," within the tolerances listed below. Tolerance classes for each road are listed on the "Typical Section Sheet."

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline Alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Excavation Slope Ratio
Common Earth	1:1
Fractured or loose rock	1½:1
Hardpan or solid rock	1¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Except as construction staked or designed, embankments shall be widened as follows:

Height at Centerline	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Embankment Slope Ratio
Common earth and rounded gravel	1½:1
Angular rock	1¼:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment.

5.1-14

Where side slopes exceed 50 percent, full bench construction shall be utilized for the entire subgrade width except as construction staked or designed.

5.1-21

Waste material shall not be deposited within 30 feet of a culvert installation.

5.1-22

Waste material shall not be deposited within 30 feet of a live stream.

5.1-23

Turnout locations noted on this plan are approximate. Locations shall be adjusted to fit final subgrade alignment and sight distances. Location shall be subject to written approval of the contract administrator.

5.1-24

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Minimum dimensions are shown on the "Typical Section Sheet."

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5.4-1

Silt-bearing runoff shall not be permitted to go into streams.

5.5-2

Reconstructed subgrades shall be compacted.

5.5-5

Finished subgrade shall be crowned as shown on "Typical Section Sheet," uniform, firm, rut-free and shaped to ensure surface runoff in an even, unconcentrated manner.

## SECTION 7 - ROCK

### 7.1-1

Rock for reconstruction under this contract may be obtained from an existing pit on State land as listed below. Development and use shall be in accordance with a written "Pit Development and Reclamation Plan." Upon completion of pit operations, the pit shall be left in the condition specified in said plan, subject to written approval by the contract administrator. Use of material from any other source must have prior written approval from the contract administrator. If other operators are using, or desire to use this pit, a joint operating plan shall be developed. All parties shall follow this plan.

#### Pit Location

#### Remarks

Section 2 Pit  
S2-T35N-R6E

Development of an existing gravel source at milepost 0.1 of the HO-2010 road. Development will involve clearing, stripping, and processing rock to generate gravel ballast. Pit plan on sheet 13.

### 7.1-5

Rock for ballast may be obtained from private sources at Purchaser's expense. The quality of any alternate rock must be equal to or greater than the quality of the rock specified in clause 7.1-1. Use of rock from any alternate source is subject to written approval from the contract administrator.

### 7.2.1.2-2

Rock shall contain no vegetative debris, dirt, or trash.

### 7.4.2-1

Apply at least the minimum required rock quantity as shown on "Typical Section Sheet."

### 7.4.2-2

Subgrade shall be approved, in writing, by the contract administrator prior to application of rock.

### 7.4.2-7

Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.

### 7.4.2-8

Each lift of rock shall be crowned as shown on "Typical Section Sheet," and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even, unconcentrated manner.

### 7.4.3-3

Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

#### 7.4.4-1

Riprap shall consist of angular stone, concrete in sacks, or concrete slabs placed as indicated in this plan, or as directed by the contract administrator.

Loose Riprap - The stone for loose riprap shall be hard, sound and durable. It shall be free from segregation, seams, cracks and other defects tending to destroy its resistance to weather. Loose riprap shall be free of rock fines, soil or other extraneous material.

Heavy Loose Riprap Grading Requirements		
At Least/Not More Than	Minimum Size	Maximum Size
40% / 90%	1 Ton (1/2 cu. yd.)	--
70% / 90%	300 lbs. (2 cu. ft.)	---
10% / 30%	---	50 lbs.

Light Loose Riprap Grading Requirements		
At Least /Not More Than	Size Range	Maximum Size
20% / 90%	300 lbs. to 1 Ton	---
80% / ----	50 lbs. to 1 Ton	---
10% / 20%	---	50 lbs.

#### 7.4.4-2

Riprap shall be set in place in conjunction with or immediately following construction of the embankment. No placement by end-dumping or dropping of riprap shall be allowed.

## SECTION 9 - ROAD AND LANDING CLOSURES

#### 9.1-1

The following roads shall be closed by the Purchaser prior to the termination of this contract.

Road	Location	Closure type
LH-1400	MP 0.0 to MP 0.5	Inactive

#### 9.1-2

"Inactive" closure shall consist of:

1. Construct drivable waterbars in conformance with the "Culvert and Drainage Specifications : Driveable Waterbar Detail" immediately downgrade of each ditch relief culvert. Avoid installing intermediate waterbars between culverts. Waterbars on inactive roads are intended to act as "safety valves" for failed culverts, not as full time drainage structures. If it is necessary to install intermediate waterbars, they should not be keyed into the ditch. They should function only as road surface drains.
2. Waterbars shall be skewed at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.

3. Waterbars shall intercept the ditch and be keyed into the road cut slope and be outsloped to provide positive drainage. Outlets shall be on stable locations.
4. Clean all remaining ditch line and catch basins to ensure functional drainage.
5. Inslope or outslope the road as appropriate.
6. Clear brush 10 feet beyond centerline of ditch and 10 feet beyond outside edge of road.
7. Remove berms except as designed.
8. Revegetate all exposed soils resulting from the inactivation work in accordance with "Section 10 - Revegetation".

9.2-1

Purchaser shall reduce or relocate landing debris, in a manner approved, in writing, by the contract administrator, to avoid landing failures and potential debris slides.

9.2-2

Purchaser shall provide for drainage of all landing surfaces as approved, in writing, by the contract administrator.

## SECTION 10 - REVEGETATION

10.1-1

Purchaser shall revegetate all exposed soils within the grubbing limits resulting from reconstruction or inactivation.

10.1-2

Purchaser shall perform revegetation during the first available opportunity after reconstruction or inactivation is completed. Soils shall not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the contract administrator.

10.1-3

Revegetated soils that fail to germinate or are disturbed and re-exposed through any cause shall be revegetated to the point of full coverage.

10.2-1

Revegetation of all exposed soils shall be accomplished by manual dispersal of grass seed and fertilizer unless otherwise detailed in this plan. Other methods of revegetation must be approved in writing by the contract administrator.



**10.3-1**

Seed mix shall meet the following specifications:

Seed Species	% by Weight
Creeping Red Fescue	50
Elf Perennial Ryegrass	25
Highland Colonial Bentgrass	15
White Clover	10

All seed species shall have a minimum 90% germination rate.  
Weed seed shall not exceed 0.5% by weight.

**10.3-2**

Fertilizer shall meet the following specifications:

Chemical Component	% by Weight
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

**10.3-3**

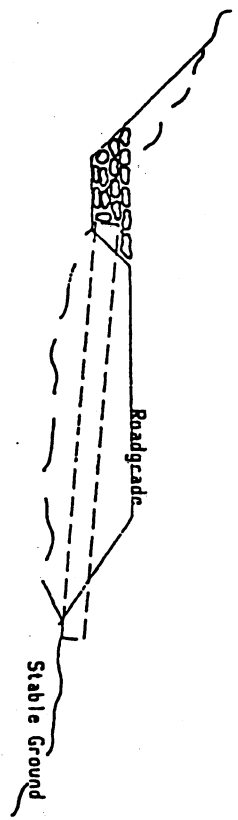
Revegetation application rates shall result in 50 pounds of in place seed mix and 200 pounds of in place fertilizer mix per acre of exposed soil.

**10.4-1**

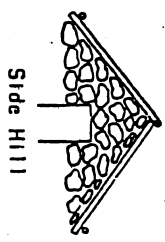
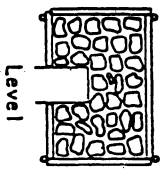
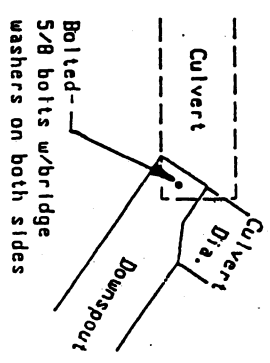
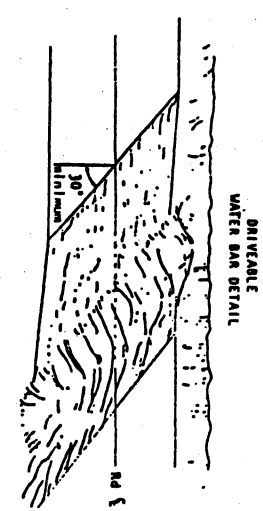
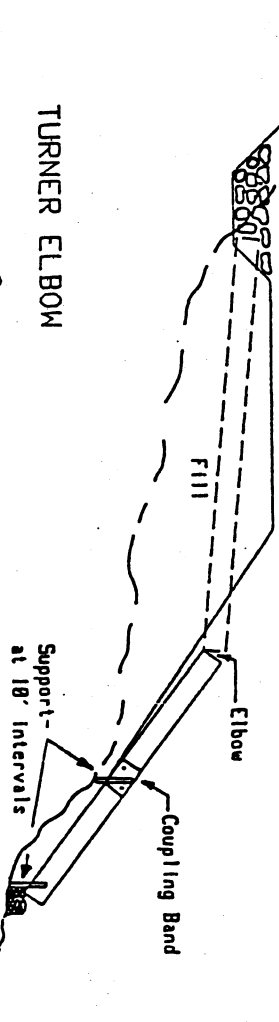
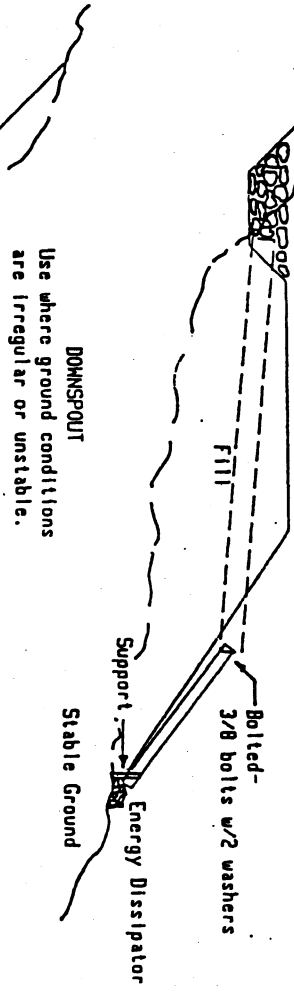
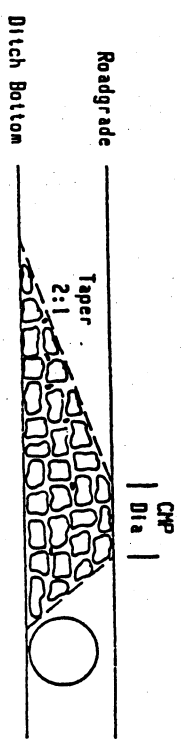
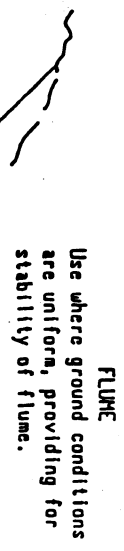
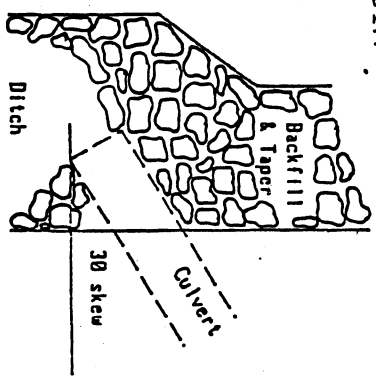
Purchaser shall provide a protective cover over the revegetated area if revegetation occurs between July 1 and March 31. The protective cover may consist of, but not be limited to, such items as dispersed straw, jute matting or clear plastic sheets. The protective cover requirement may be waived by the contract administrator in writing if the Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop of 3 inch tall grass by October 31.



HEADWALL/CATCHBASIN

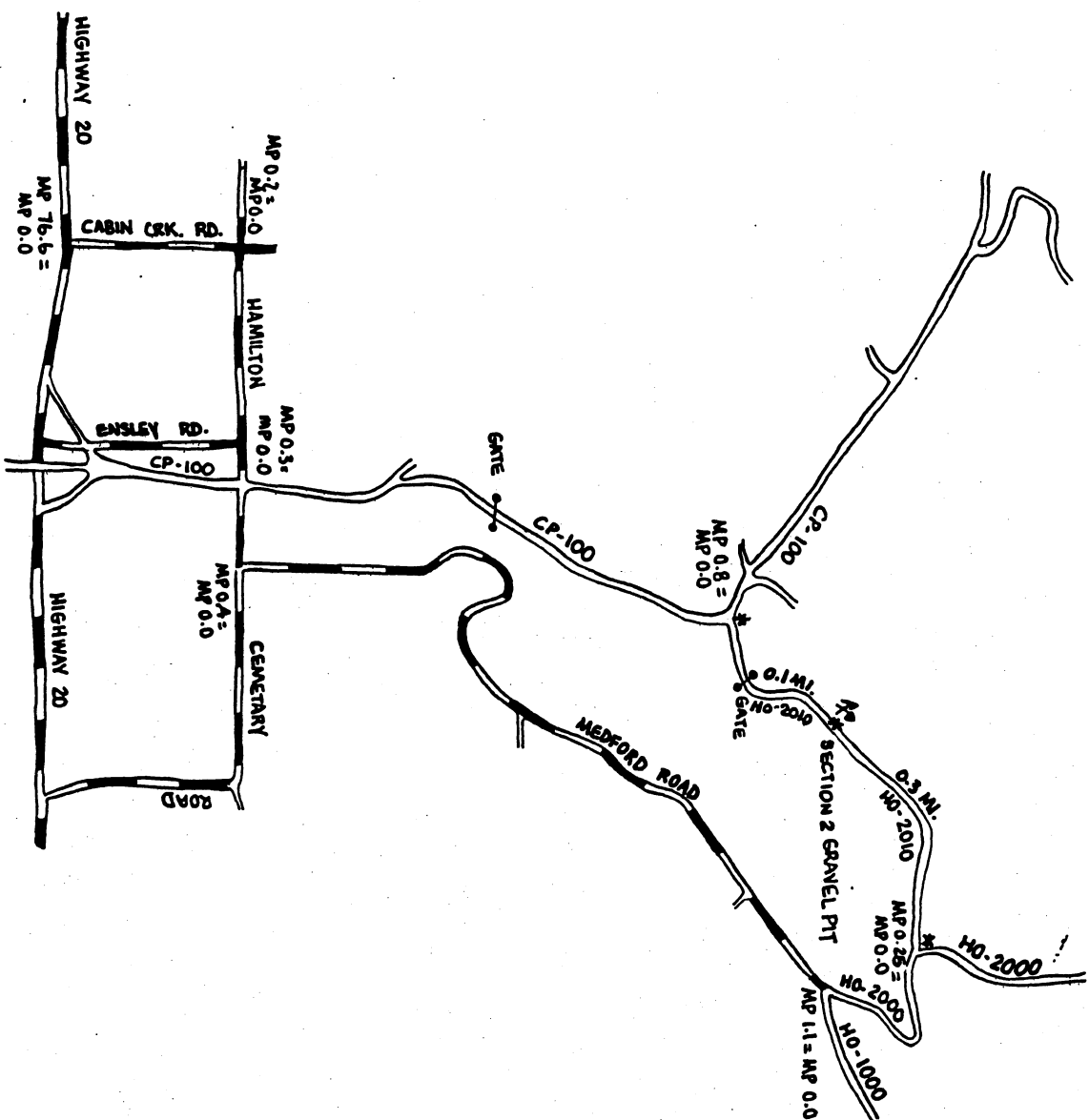


Headwall to be constructed of impervious material that will resist erosion.



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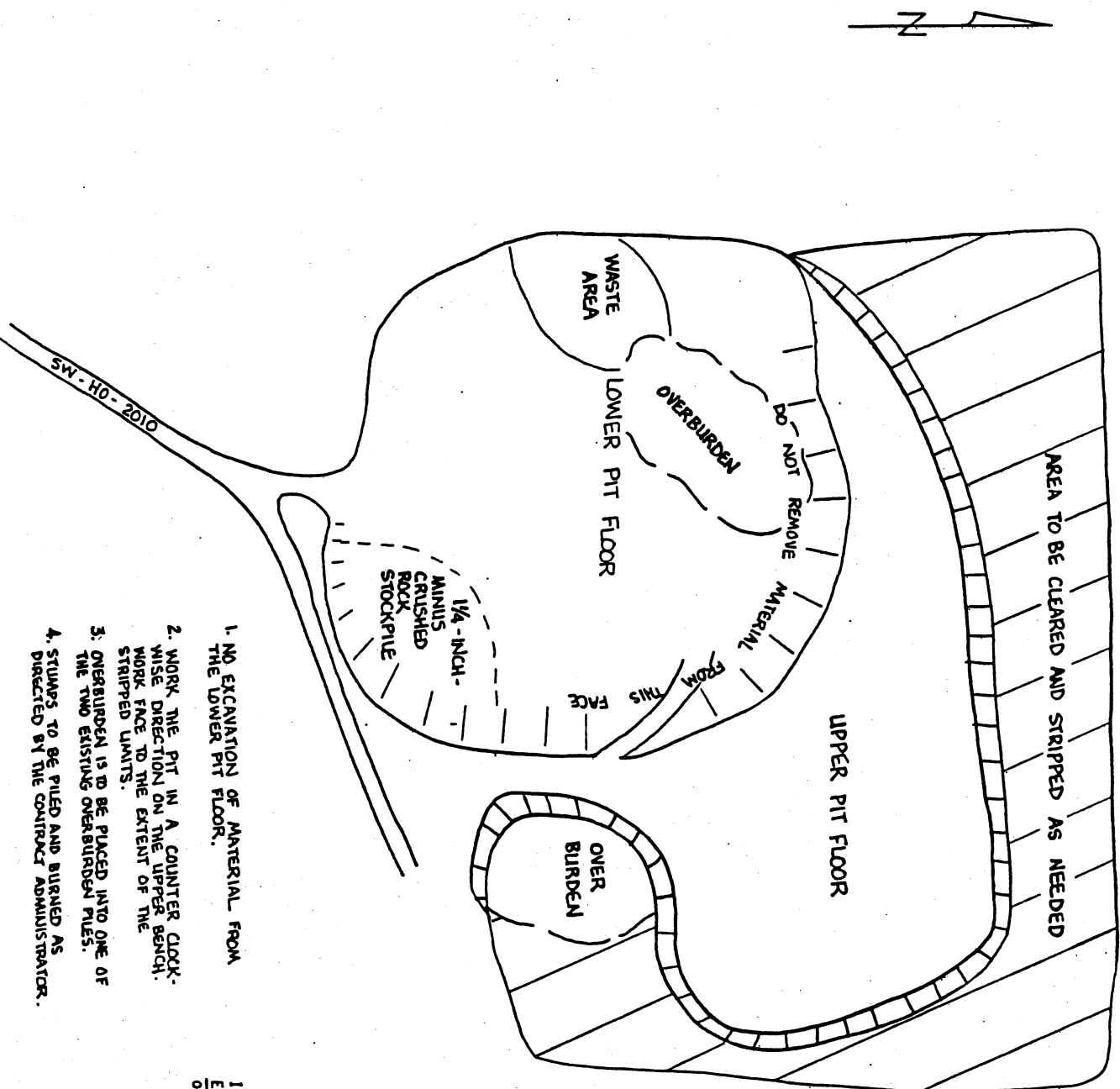
SECTION 2 PIT  
SM1/4 SE1/4 S2-35N-R6E



5/97

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SECTION 2 PIT  
SM1/4 SE1/4 S2-T35N-R6E



1. NO EXCAVATION OF MATERIAL FROM THE LOWER PIT FLOOR.
2. WORK THE PIT IN A COUNTER CLOCK-WISE DIRECTION ON THE UPPER BENCH. WORK FACE TO THE EXTENT OF THE STRIPPED LIMITS.
3. OVERBURDEN IS TO BE PLACED INTO ONE OF THE TWO EXISTING OVERBURDEN PILES.
4. STUMPS TO BE PILED AND BURNED AS DIRECTED BY THE CONTRACT ADMINISTRATOR.

Washington State Department of Labor and Industries. The following clauses (MAC 296-155-66005) are taken from the Department of Labor and Industries publication Safety Standards for Construction Work and are hereby made a part of this contract:

- (1) When excavating equipment is used to remove earthen material from borrow pits:
  - (a) The pit walls shall be maintained in a condition to reduce the possibility of the walls sliding or caving in where employees could be exposed to the danger of moving ground.
  - (b) The pit walls shall be maintained at a height no greater than the maximum reach of the excavating machine. (DNR Northwest Region policy specifies a maximum 12 foot high pit wall.)
  - (c) Employees on foot shall not be permitted to be in close proximity to the pit walls.
  - (d) Pit walls shall not be undermined.
  - (e) Wall control.

- (i) The safe control of borrow pit walls, including the overall slope of the walls, shall be consistent with:
  - (A) Recognized engineering standards;
  - (B) The nature of the ground and the kind of material being excavated.

- (ii) Excavation methods shall be selected which will ensure wall and bank stability including benching as necessary to obtain a safe overall slope in accordance with the following table:

Minimum Required Degrees of Slope  
for Different Types of Soil  
Encountered in Excavations

Borrow Pit Material	Slope Ratio Horiz:Vert	Slope Angle Vert Degrees
Well Rounded Loose Sand	2:1	27°
Compacted Sharp Sand	1 1/2:1	34°
Average Soils	1:1	45°
Compacted Angular Gravel	1/2:1	63°
Solid Rock; Compact Shale	--	90°

In addition, the Washington State Department of Natural Resources' Forest Engineering Manual gives further specifications on multi-leveled pit operations:

- (1) Limit the width of working benches to a minimum of 1 1/2 times the maximum length of the largest machine in use.
- (2) Pit floors and benches shall have a uniform surface and be self drained at a minimum of 2% outslope.

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FOREST ACCESS ROAD

ROAD MAINTENANCE SPECIFICATIONS

I. NEW ROADS (Prior to acceptance of contract or acceptance on timber sale)

A. Cuts and Fills

1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1½-1 slopes with selected material or as directed. Remove overhanging material from cut slopes.
2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
3. Undesirable slide materials and debris shall not be mixed into the surface material.

B. Surface

1. Grade and shape road surface, turnouts and shoulders to original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
2. Blading must not undercut backslope at bottom of ditchline.
3. Watering may be required to control dust and to retain fine surface rock.
4. Desirable surface material shall not be bladed off the roadway.
5. Replace surface material lost or worn away.
6. Remove berms except as directed by the State.

C. Drainage

1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
2. Inspect and clean culverts at least monthly, with addition inspection during storms and periods of high runoff. This must be done even during periods of inactivity.
3. Add stable material at outlet end of the culvert as needed to stabilize stream bed.
4. Headwalls - maintain to road shoulder level with material that will resist erosion.
5. Keep silt bearing surface runoff from getting into live streams.

D. Structures

1. Repair bridges, culverts, cattle guards, fences and other road structures to condition required by construction specifications.

E. Termination of Use or End of Season

1. Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch and culvert cleaning, water bars.

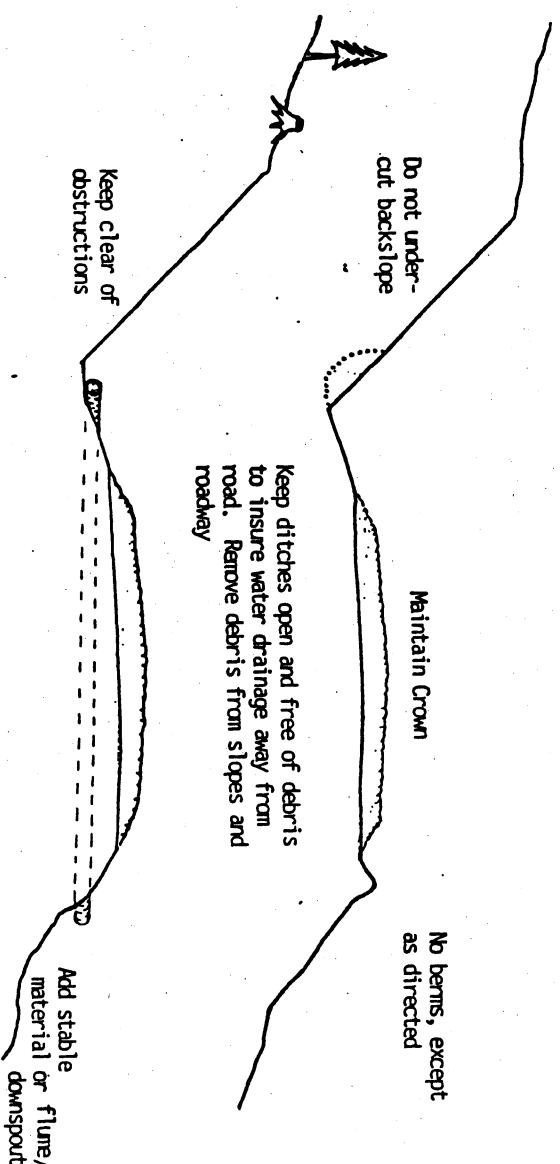
F. Debris

1. Remove fallen timber, limbs, stumps from slopes or roadway.

II. Existing Roads - Timber Sale, Operator Maintained

- A. Same as I above but not to exceed the condition of the road on the date the contract was signed.

III. A.R.R.F. - Direct maintenance to comply with these specifications.



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